

1 overview

- 1) Finished a course task of Hefei University of Technology
- 2) Read some papers of sequence search and parameter tuning
- 3) Found a new idea of AI4Vis

2 Discussion with Prof. Xiqun Chen

- 1) Map-matching 时，可以将结果对应到车道上，这样在十字路口时就能判断转向，有的时候三个方向的车道仅有一条车道会出现拥堵的问题，如图 1 所示

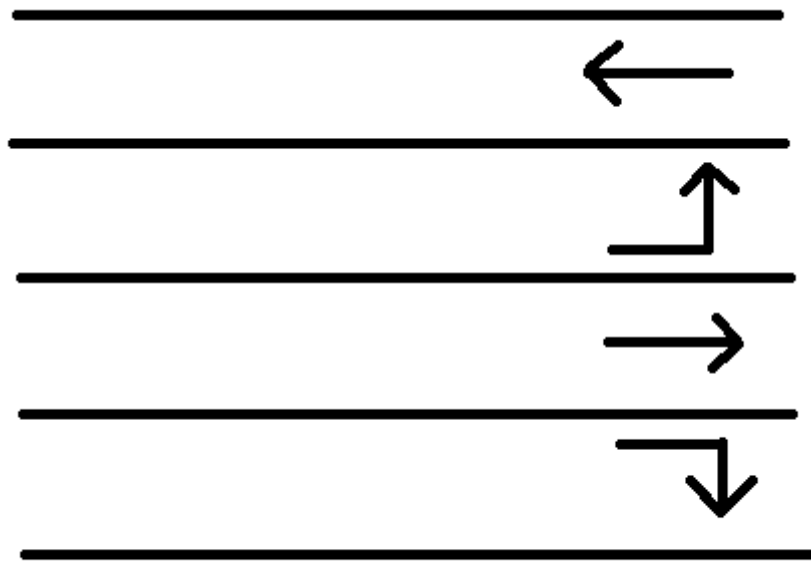


Fig. 1.

- 2) 有了各个车道上的车数信息，就可用于拥堵预测。拥堵预测的数据是不完全采样，数据由不完全到完全需要数据补全步骤，或用部分数据来估计总体情况
- 3) 不完整数据补全则是 GPS 坐标的另一个很有意义的工作

3 Paper reading

3.1 Efficient and Effective KNN Sequence Search with Approximate n-grams-2013

Similar sequence search is a method for querying the annotation of a paragraph which is from a photo of page in the book and recognized by OCR. This article proposes a novel KNN

sequence search framework for coarse search.

3.2 Mastering the Game of Go with Deep Neural Networks and Tree Search-2016

The program of this paper is known as “Alpha Go”. I think the process of learning how to play the game of go can be used to understand some result of visualization.

3.3 Online Map Matching with Route Prediction-2019

This is a recent published paper about online map-matching algorithm. The article think that it is hard to obtain future position when using online map-matching algorithms (MMAs). They propose a method that use predicted node instead of future node, so that they could use offline MMAs to solve map-matching problem. The prediction model they used is Markov model, and the map-matching algorithms is Bayesian filtering which is a old machine learning method for map-matching.

I have thought about this idea, but this paper has been published just before 4 days.

3.4 An Instance-Specific Parameter Tuning Approach Using Fuzzy Logic for a Post-Processing Topological Map-Matching Algorithm-2018

“This study proposes an IPTS design that uses a fuzzy inference system to determine a set of algorithm-specific parameter values based on instance-specific information.”

“This membership degree is assessed by a membership function that is created for each fuzzy set such as ‘low’, ‘medium’, and ‘high’. The proposed fuzzy inference system, which includes a set of membership functions for each variable and a rule base, is based on a manual design. This design is obtained from a statistical analysis. Hence, the fuzzy sets are a subjective interpretation of the individual parameter levels.”

4 Work Schedule

Date	Tasks	Duration	Time cost
Mon. to Tues.	Course Works	9:10-22:00	2X11=22 hours
Wed. to Fri.	Paper reading	9:10-22:00	3X11=33 hours
Sat. to Sun.	Reading and thinking	10:10-22:00	9X2 = 18 hours

Total work time = 73 hours